

MACRO-INVERTEBRATE COMMUNITY IN RELATION TO WATER QUALITY STATUS IN UPPER NORTHERN BASIN OF THONDAMANARU LAGOON, JAFFNA, SRI LANKA

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Abstract: Biological indicators including macro-invertebrates are more accepted monitoring tool to assess the aquatic bodies. Thondamanaru lagoon is experiencing loss of biodiversity in and around the lagoon. This study was conducted for one year period from November 2021 to October 2022 to analyse the present status of water quality with macro-invertebrate survey in the upper part of the northern basin of Thondamanaru lagoon. Mud and water sample were collected twice a month from following three sampling sites: S1- Beyond the barrage, in front of the field work center (N-9° 81.27', E- 80° 12.88') S2- near the barrage and in front of Selva Sannathi Kovil (N-9° 82.04', E- 80° 13.11') and S3- near the sand bar (N-9° 82.04', E-80° 13.46'). Water quality parameters including water temperature, salinity, pH, dissolved oxygen, electric conductivity, oxidation reduction potential, alkalinity and orthophosphate that can affect the distribution and abundance of macro-invertebrates were assessed. Based on the morphological characters, among identified 31 taxa, gastropods were the most abundant group. Fresh water shrimp *Macrobrachium* sp. was found for the first time at S1 but no longer exist throughout the period. Based on the statistical analysis by one way ANOVA, species richness, Simpson index, salinity, pH, total dissolved solid and electric conductivity showed significant differences among the three sites (P<0.05). This study revealed the impact of barrage construction across the lagoon on the diversity, distribution and abundance of macro-invertebrates with extensively changing the movement of water flow and water quality. Continuous monitoring and sustainable lagoon ecosystem management are need to maintain the biodiversity and ecosystem health of Thondamanaru lagoon.

Keywords: Biodiversity; Biological indicator; Macro-invertebrate; Lagoon